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CHANGING HEALTH HABITS

THERE is nothing with which we part more unwillingly than our established attitudes of mind and habits of behaviour. They are part of our personality; and we discard or modify them only when we are driven to do so by the need to avoid unpleasantness or to gain a valued reward.

This is something we must never lose sight of in health education. To inform alone will not succeed; we must also interest and persuade. It is true that new attitudes are generally built up by stages, that straightforward instruction has a part to play in this building process, and that entirely objective information should support and strengthen emotion. But, ultimately, behaviour must be changed as well as knowledge; the heart must be reached as well as the head.

In his important article in this issue (page 66), Lewis shows that the necessity to relate our health teaching to their interests applies just as strongly to children and adolescents as to adults. They are interested in, and prepared to study, what is significant to them—personal appearance, personal success, personal problems. And the relative significance of these things changes as they grow older. These interests should, of course be broadened; but we must start from them. In short, health education must be made to measure.

This is a lesson of great importance to all health educationists. No matter what the problem may be, we must always remember that "whatever the medium, the actual presentation should vary according to the probable intelligence, interests, background and circumstances of the audience. In each case, the organisers should know clearly what it is they want to do—interest, inspire or inform. They should know also whether they are trying to remove prejudices, add to knowledge, or change attitudes or behaviour; to whom the message is addressed; when and where it will reach its desired audience; in what circumstances it will reach them; with what interests it will have to compete; and what are the major points that it is desired to make."* Admittedly this is a tall order. But, as Lewis shows, we must make such a planned approach if our efforts are to be neither misdirected nor ineffective. There is therefore an urgent need in this country for original investigations of the Denver type amongst all age groups and all classes.

**Sutherland, Robert, 1949. "Health Education." (pp. 444–464, of "Modern Trends in Public Health," Butterworth & Co., Ltd., London. Ed. : Arthur Massey.)*

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MODERN TRENDS IN HEALTH SERVICE

By W. Norman Taylor, M.D.(Lond.), D.P.H., *Professor of Hygiene, South African Native College, Fort Hare.*

We are living in great days of the development of our civilisation. We know that it is possible to have a well ordered society, where there is enough for all and leisure for all to enjoy it, and where fear and want are banished. The Atlantic Charter and its Four Freedoms put this vision of our goal right at the top priority. For the first time the representatives of civilisation stated these objects in precise terms, and now at last the large majority of people have at any rate been able to catch a glimpse of what such a future society might be like. It remains for us to keep that goal before us so that consciously or unconsciously our work is directed to those ends, however far distant those ends may appear to be.

One of the most important objectives is that relating to health. Before our eyes there have already been significant changes, and we should examine these changes and examine our attitudes towards them. What then is the present trend of the science of health, and what can we expect in the future ?

For many years medical science has realised that it is the community's responsibility to provide an environment not detrimental to the individual's health, and, as far as possible, the community has shouldered this responsibility. This is known as preventive medicine or public health. Water and food are supplied by the community in pure form, refuse is disposed of in a hygienic way, working conditions are regulated so that they do not injure health, and so on. But public health only takes a broad view. It is concerned only with the mass and not with the individual. It is concerned with laws and regulations and there is always a limit to what can be done by such methods. Laws and regulations can prevent a certain amount of ill-health, but they cannot *give* health.

Side by side with the public health service we have the curative service ; the ordinary doctors and nurses and hospitals, killing germs, repairing wounds, cutting out growths, but here again not *giving* health as such.

But now at last these curative doctors are realising that something more is required. They realise that much of their work is wasted unless the environment, presumably the ultimate cause of the condition, is not also improved at the same time as the patient. Thus there has developed the

science of social medicine. It is true that even now the real cause of much of our ill-health is not known, but we can safely assume that the better the social environment—and this includes the psychological as well as the physical environment—hereditary factors being equal, the better will be the health. And with the growth of the science of eugenics, even the hereditary factors may also yet be controllable. Doctors have of course always been asking themselves "Why was it necessary for this man to become sick?" In the case of the public health diseases the answer was usually obvious. But with most of our modern sicknesses the answer to such a question was more indefinite; and even if the answer was known the possibility of being able to do much about it was too remote to warrant further thought. But nowadays with increasing organisation of the community in which we live such questions can be asked not only with some hope of an answer being forthcoming, but also with the possibility that the situation causing the disease can be improved.

Positive Health

The time has passed where Society sees as its duty merely the prevention of the so-called public health diseases. Society now goes a step further and attempts to prevent *all* diseases. Its responsibility must go further than the provision of a healthy living and working environment, because preventive measures alone will not be enough. Prevention is a negative attitude, and for a unified approach there must also be the positive attitude. Health is a positive quantity, freedom from disease is a negative one, the two sides of the same thing. Society must therefore actively foster the pursuit of positive health, that is to say, health for health's sake, rather than simply the prevention of disease.

This conception of health as something positive, something with an entity of its own, is a new idea still not fully grasped by most of the individual members of society. So many people have the negative idea about health; they regard it as the state of not being ill, something that can only be obtained from the chemist or doctor. But what is true health? It is not the mere absence of disease. On the contrary, it is nothing to do with disease. Health has been defined as a state of wholeness or completeness. It is a state of full harmonious well-being, a state of efficiency of function of body and mind, not only in itself, but integrated into the community of which the body is a member.

Can this thing called health be given to people? Does it come by itself or do we actively have to seek after it? These are some of the questions that the science of social hygiene tries to answer. But meanwhile clearly the first step lies in the education and supervision of the individual members of the community, and in the minds of the people must be established the correct attitudes towards health. Health must be presented

as something beautiful and desirable for its own sake, not something associated with teeth-cleaning or inoculations. When all is said and done what can be more beautiful, or more important both to the individual and to the community, than a healthy mind in a healthy body. *Mens sana in corpore sano* was known to be desirable thousands of years ago, but it has taken until now for us to begin to see how this ideal can be realised. Men have always known this dictum, and have always groped and struggled after it; but until now there has always been such a confusion of ideas, their minds have always been so cluttered with irrelevancies and their capabilities so hampered by the limitations of the world as they found it, that little progress was made until comparatively recent times.

The Trend in Dealing with the Sick

With this brief explanation of the new aims and ideas in the realm of health let us look at what is actually being done about it all, and let us try to see the shape of this modern trend. The best way to examine any trend is first of all to look at its past, then we can get some idea of its general direction and so estimate what its future course will probably be like. What, then, has been the trend of medicine, so far? From the Middle Ages onwards there has been the increasing realisation that society must provide for those unable to provide for themselves. In the past such services were often regarded as acts of charity, even welcomed as means by which a rich man might enter the Kingdom of Heaven. Now we realise that they are no more than what is justly due to those more unfortunate than ourselves, and, as such, are necessarily a charge to the whole community. Those suffering from mental illness have received free care for many centuries past, while for a hundred years or more society has provided treatment for those suffering from communicable diseases, such as smallpox or cholera, though the object was more to protect the healthy than to help the sick. More recently tuberculosis was recognised as the State's responsibility. Now at last, in Britain, society has taken the plunge and undertaken the treatment of *all* forms of illness.

The Development of a True Health Service

So much for the trend with regard to *sickness*. We can see how more and more the whole burden of illness has been taken over by the community. The idea of the communal responsibility with regard to health dates back only about fifty years. Firstly there was the realisation that the health of a nation depends ultimately on the health of its children. And so was introduced the School Medical Service, with the idea of seeing to the health of *all* the children, not merely those who were sick. This novel idea, as it then was, has been the pattern for the development

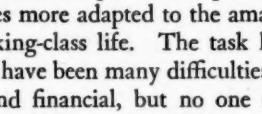
of all health services since then, that is to say, the idea that all the members of a group, sick and well, should be attended to. Next there followed the Maternity and Child Welfare Service, with the establishment of infant welfare clinics to which babies could be brought, the healthy as well as the sick, and where advice on their care and upbringing was given free. With the recent extension of the School Medical Service to the age of eighteen we see that the State has gradually taken over the task of supervising the health of the rising generation from the age of minus nine months until adult life. It now only remained to extend the service provided to include all adults. The credit for exploring this idea must go to the Pioneer Health Centre at Peckham. Much has been written about the work done there, unfortunately interrupted by the war ; and this is not the place to give any detailed account of it. But suffice it to say that there were worked out and demonstrated the techniques for the supervision and cultivation of health for health's sake. In Britain such schemes are in working order only at Peckham and at one or two municipalities. Apart from this, although there has been the biggest reorganisation of the medical profession in its long history, there has not been much done in this direction as yet. The new National Health Service, in spite of its name, remains essentially a *disease* service. The development of a *health* service in the true sense of the word is still a thing for the future, but, given peace and prosperity, it is not likely to be delayed long.

The South African Experiment

It is to the younger countries that we must look to see these newer ideas on health in actual operation. One such country is South Africa, where, seeing this trend and realising its meaning, they have launched a Health Scheme in the new sense of the word. That is to say, not a scheme designed to see who shall be paid benefits when sick, but a scheme designed to bring health and happiness to people who need it. In South Africa the population is composed of two elements, on the one hand the rich highly civilised Europeans, and on the other the primitive and ignorant native and coloured population, with their low standard of living and, inevitably, their numerous diseases. This under-privileged section of the population cannot and will not remain in its primitive state. It is gradually changing for the better—better wages, better standards, better education. Although these changes seem too slow for the politicians among these people, they are taking place too rapidly for the orderly evolution of social ideas to fit the changing circumstances, and sociologists are all too well aware of the difficulties and dangers. It is a very difficult thing to guide the orderly evolution of a backward people, but in the social field relating to health the attempt is being made. Are they to evolve via the out-moded European pattern, where health is associated

with the price of a bottle of medicine, or should the State take responsibility for safeguarding their health from first principles? South African health officials saw the tremendous opportunity presented here to put into practice the new approach. They saw that it was incongruous to train doctors to treat diseases, the majority of which were easily preventable provided the people had a little more knowledge and a little more help. And so health centres were built, at first experimental ones based on Peckham and on the experience of private workers. Later have grown up health centres more adapted to the amazingly complex pattern of South African working-class life. The task has proved to be a formidable one, and there have been many difficulties and prejudices to overcome, both political and financial, but no one can fail to watch with interest the development of this modern health service.

Our generation is a privileged one. More than ever we are conscious of the evolutionary changes going on around us, and, more important, we are at last aware that we can help to shape our evolution towards the ideals of a better and fuller life for all. In that little part of our culture to do with health we have watched its progress, we have seen evolution at work. We can help to clear away the rubbish of the old prejudices and so help it on its way.



FREE WASHING FACILITIES AT ALL PUBLIC CONVENIENCES

The following note from Dr. B. Broadbent, Medical Officer of Health of the Borough of Shoreditch will be of interest. It describes a policy that might with advantage be adopted by other local authorities.

"It may interest readers to know that the Shoreditch Borough Council on 1st December 1938 agreed to provide free washing facilities for *ALL* at its Public Conveniences, and, although discontinued during the war owing to the shortage of paper towels, this service was reinstated last year.

"There are no rules and there is no need to sign a book—any member of the public has only to ask the attendant for a paper towel and the free washing facilities are there."

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THE COMMON COLD

By T. Sommerville, M.B., Ch.B., *Common Cold Research Unit, Harvard Hospital, Salisbury.*

During the present century great progress has been made in this country in the prevention and control of the major epidemic diseases, which in bygone ages levied such a heavy toll of life. Plague and cholera no longer occur ; smallpox and enteric fever are seen only occasionally and are quickly brought under control. This gratifying achievement is the outcome of knowledge gained about the cause and methods of transmission of these diseases. We are still faced, however, with a whole host of minor communicable diseases, of which the common cold is chief, which defy public health authorities, cause an undue wastage of valuable manpower, and stand as a challenge to scientists.

Our inability to prevent and control epidemics of the common cold need cause no surprise when it is realised how ignorant we are about the natural history of the disease. At present, our knowledge is so fragmentary that it would be unwise to attempt to answer with confidence the many questions which will be in the minds of most readers. The delay in obtaining the essential information about the natural history of the disease is due to the lack of a convenient laboratory method for recognising the presence of the causal agent. The cultural techniques which have proved so successful in the study of many virus infections have, up to the present, proved unsatisfactory for the isolation of the causal agent of the common cold, and the chimpanzee is the only animal which has been shown to be susceptible to the human infection. Consequently, such information as is available at present, is based on epidemiological observations, especially of semi-isolated communities and on experiments which have been carried out on human volunteers. The use of human volunteers to unravel the problems of disease is somewhat novel, so that a brief description of the life one group of volunteers leads may be of interest.

The Salisbury Experiment

The Common Cold Research Unit, comprising Dr. C. H. Andrewes and his team, is sponsored jointly by the Medical Research Council and the Ministry of Health. The accommodation consists of 22 American centrally heated prefabricated huts and a number of Nissen huts. The hospital was erected by Harvard University for a team of American scien-

tists, who came to this country in 1941 to assist in the control of epidemics which it was expected would follow the heavy Nazi bombing. At the end of hostilities with Germany, Harvard University generously gave the hospital to the Ministry of Health. The Common Cold Research Unit started work at Salisbury in the summer of 1946.

Volunteers have been chiefly used to determine whether or not a cold-producing agent is present in test materials. For example material harvested from a fertile egg, which has been inoculated with a nasal washing from a common cold case, is tested to find out whether the virus has survived.

The duration of stay of volunteers is 10 days. For the first three days they are under observation to determine their suitability for the experiment and on the fourth day they receive the "experimental drops" intranasally, following which they are under observation to see whether or not a cold develops. A general clinical examination supplemented by a radiological examination of the chest and sinuses is made on each volunteer before the administration of the test material. Volunteers are not called on to live in solitary isolation, but share a 'flat' with a partner. Country walks are permitted provided that built-up areas, buildings and vehicles are avoided; they are instructed to maintain a distance of 30 feet from people they meet. Conditions are made as attractive as possible. Each flat for two persons contains a sitting room, a dining room, two bedrooms, a medical room, a bathroom and a lavatory. Sitting rooms are fitted with a wireless set and a telephone. Indoor games and books are provided and there are facilities, in outlying huts, for badminton, table tennis and miniature tennis. Travelling expenses are paid and volunteers receive 3s. a day pocket money. Volunteers must be within the age group 18–40 and give no history of hay fever, asthma, tuberculosis or chronic sinusitis. The volunteers who have attended the trials include university students during their vacations, representatives from industry, especially Messrs. W. D. & H. O. Wills of Bristol, and the general public.*

What is a Cold?

Most of us are all too familiar from personal experience with the clinical manifestations of the common cold. There is little doubt, however, that a number of agents are responsible for the diseases resembling the common cold. We are gradually beginning to sort them out and recently the American Commission on Acute Respiratory Diseases, from their studies on volunteers, have differentiated five minor respiratory illnesses, largely on the basis of differences in the lengths of their incuba-

*Volunteers are still required. Those interested should apply to:—
The Medical Officer in Charge, Harvard Hospital, Coombe Road, Salisbury, Wilts.

tion periods. It is not possible however, for the clinician when presented with an individual case to reach a diagnosis on an aetiological basis with any degree of scientific accuracy, so that such terms as flu, chill, influenzal cold or "just a cold" are all in common use as labels for the same clinical syndrome, which may or may not be the same disease.

The disease we call the common cold at Salisbury has usually an incubation period of 2–3 days. Nasal discharge is almost always the predominant symptom; it is usually thin and watery at first, becoming thick and viscid after 24 hours. Malaise, headache and mild sore throat are common at the onset, but fever is exceptional. About a third of the cases develop a dry unproductive cough, but we rarely see complications in the form of sinusitis, earache or tracheitis. The experimental illness is a mild one and of short duration, rarely lasting longer than 6–7 days.

What Causes the Common Cold?

Opinion on the cause of the common cold is sharply divided. There are those who consider that the cold is an infectious disease and that it is passed from case to case by contact. Others stoutly deny this and strongly press the view that colds are acquired as the result of exposure, brought about by draughts or getting the feet and body wet. Epidemiological observations, which have been made by numerous observers on Arctic expeditions, show that explorers do not suffer from colds even under conditions of extreme exposure. On the other hand it is possible to produce colds in about 60% of volunteers by the intranasal inoculation of common cold nasal washings or with filtrates of such washings. It would seem therefore, that colds cannot occur without the presence of the infective factor. The possibility, however, cannot be excluded that the exposure factor may play a part in certain people, who are temporarily carrying the virus, by upsetting a finely adjusted virus-host equilibrium.

The balance of evidence is in favour of colds being caused by an infective agent, which has the general characters of a virus. Its properties have not yet been fully defined, but filtration experiments suggest that its size is in the region of 20mμ–50mμ i.e. considerably smaller than the influenza virus and larger than the virus which causes poliomyelitis. It has not yet been demonstrated by electron microscopy. Nasal washings which have been obtained from common cold cases have been stored in dry ice at a temperature of −76° C for two years, and have produced colds in volunteers after this period of storage.

How do Colds Spread?

The common cold is a human disease so that man is the only source of infection. Experiments with volunteers have shown that the causal agent is present in nasal washings not only at the height of the illness

but also 24 hours before the onset of symptoms. The meagre evidence at present available leads us to think that in the majority of cases the virus does not persist in the human tissues for any length of time, and that a carrier state is not common. It would seem probable therefore, that the virus is dispersed by an infected individual during the latter part of the incubation period and during the early stages of the clinical attack. It must be remembered too, that inapparent infections are probably commoner than is generally realised and may well exceed in numerical prevalence frank clinical attacks. The part that these cases of inapparent infection play in disseminating the disease may be one of great importance. Under experimental conditions the incidence of natural contact infections is low. In one experiment we allowed 19 people to be in contact for 10 hours with experimentally infected cases and only one of the 19 exposed subsequently developed a cold. The existing evidence would suggest that the usual method of spread is by coarse droplets. These are transferred from case to susceptible by 'direct hit' during sneezing and coughing. If this is so, it would be unreasonable to expect air sterilization to be effective in the prevention and control of common cold epidemics.

What Factors Influence the Variability of Outbreaks?

Marked differences in the epidemiological characteristics of the common cold have been observed in different places at the same time and in the same place at different times. The factors that may be responsible for the wide variability of the epidemics can conveniently be considered under three general headings, namely, variation in:—(a) host susceptibility, (b) the virus and (c) the environment.

Host Susceptibility

Variations in susceptibility of different population groups might be expected to arise from differences in age, sex, physical status, geographic origin or recent exposure to the infection. Although we lack proof on the relative importance of these factors in producing variations in epidemics, circumstantial evidence would suggest that none of them are of outstanding importance.

Most of us know from personal experience that our resistance to colds varies from year to year. In certain years we suffer from numerous colds and in other years we remain relatively free. Scientists have not yet succeeded in finding the explanation for this variation in resistance to colds. We also know from general experience that resistance to colds does not last long. Volunteer studies in America which have been carried out by The Commission of Acute Respiratory Diseases, have shown that, under experimental conditions, individuals are again susceptible to the infection

about three weeks after their original attack. Such a result need not mean that immunity to colds is necessarily quite so short under natural circumstances. Epidemiological observations suggest that the period of immunity following a cold is between 3–7 weeks.

The Virus

The question of whether or not different strains of virus with different infectivities account for the variability of epidemics must be taken into consideration. This problem resolves itself into whether or not a single strain is responsible for colds or whether multiple strains participate in different places at different times. This question cannot be answered directly at the present time, and it would be well to keep an open mind on the issue.

The Environment

Differences in environmental factors, such as density of population, housing conditions, and the degree of intermixing of various components of the population may alter the rapidity and extent of dissemination of the disease. It would seem reasonable to expect wide variations in the epidemic characteristics when we are dealing with known differences in the environment. The seasonal incidence of the disease remains a puzzle but it may well be due to environmental factors, particularly overcrowding. Certainly attempts to correlate its incidence with temperature, rainfall, humidity and sunshine have been far from convincing. We are far too prone to think that the common cold is a winter disease only, whereas transmission is going on, especially among children, throughout the year.

Conclusion

We are justified in considering the common cold to be an infectious disease, caused by a virus. There are still many unsolved epidemiological problems whose solution awaits further detailed information about the natural history of the disease.

BIOGRAPHICAL NOTE

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CAUSES OF MENTAL ILLNESS

By R. G. McInnes, F.R.C.P.E., D.Psych., *Physician, Superintendent The Warneford Hospital, Oxford.*

Men are born with their potential capacities and weaknesses already largely determined by the quality of their ancestry. This is not to say that individual destiny is a foregone conclusion to which we are fated to march willy-nilly ; but the genes combining in the first single germ cell from which we grow, and which are themselves the distillate, and the dregs of countless generations, already contain the potentials for strength or frailty, genius or mediocrity, beauty or ugliness, within whose limits we may develop. Not everyone can be an Einstein, even if he try with diligence and devotion ; nor will resolve compose a Shakespearean sonnet if native wit and wisdom are not there. So it is in the whole range of mental life. There are innate tendencies and innate powers of resistance. These may reach full fruition or remain only in bud, according to the matrix in which they are nurtured and the climate of early life. So they may be either curse or blessing according to their quality. To be endowed with potential resistance to the " slings and arrows " is the beginning of integrity, but men do not always use this strength. The genes of genius are given by the gods, but, doubtless, the gift is often undiscovered.

In mental life, occasions for success or failure follow endlessly. We would always choose success but are often limited by our equipment. We would always avoid disaster but sometimes find that the strength is not in us.

The Influence of Heredity

Men do not inherit mental illnesses any more than Beethoven his symphonies, or Bach his fugues ; but ancestral threads are the warp of these events. The threads run on through life. If training, culture, and circumstances produce a woof which blends in crossing, all is well, the pattern is harmonious and the design is whole ; but if warp and woof should clash, the harmony is lost, the design shattered. Thus it is in mental life. Always there is the inherited trend towards a particular mode of behaviour, the innate ability to resist inimical pressures or the tendency to yield, to disintegrate. That is how heredity operates ; not by the imposition of carved-out episodes, but by the influence of tendencies, capacities and resistances in the midst of fluxing experience.

Men are sad at times with good reason ; but when this sadness is without a cause, when melancholy is prolonged and deep, and thoughts of death and failure overwhelming, then it is that half the explanation or more is to be found in what has been inherited.

Figures from research bear out the age-old belief that some mental disorders run in families. For average people the risk of melancholia is of the order of 0.4 per cent ; but in the family of a melancholic patient the risk to children is 9.5 per cent, and almost the same for brothers and sisters. The study of two-egg and one-egg twins has shown that, in the former, if one develops melancholia, the other will do the same in 16.4 per cent of cases ; but in the latter, where the genetic inheritance is presumably identical, the coincidence of the disease occurs in 69.6 per cent.

To some observers this evidence is unconvincing, but to the clinician who sees again and again the otherwise inexplicable occurrence of depression (or exaltation) in members of families where it has happened just so in past generations, the figures and his experience bring mutual confirmation of the presence of hereditary loading.

The widespread group of mental illnesses, formerly known as dementia praecox and now called schizophrenia, also owe something of their genesis to what is passed on in the germ cell. Less specific in quality than the tendency to depressive states, the schizophrenic inheritance may show itself in diverse forms and degrees. Again there are striking figures from twin researches—the coincidence in two-egg twins 14 per cent, in one-egg twins 85 per cent.

Thus it is seen that in the case of two large groups of psychoses—the manic depressive states and the schizophrenias—inheritance plays an important part. Some people view these facts with dismay and even despair. They feel that to accept the influence of heredity is to admit the illness to be both inevitable and incurable. Such is not the case. Hereditary trends may never find expression if circumstances conspire or if they are arranged so as to make their emergence unlikely. Within the genetic pattern itself modifications of expressivity may be brought about by the action of one gene upon another. Much remains to be done to clarify and increase knowledge of this complex subject ; but in many illnesses seen in the practice of psychiatry, an adequate acceptance of the hereditary factor is an essential part of any formulation which is going to be useful as a basis for further investigation, treatment and advice.

Experience in Infancy

The inner experience of infant life has been revealed by psychoanalysis. Helpless at birth, but with a load of history, the infant feels only hunger

and satiety, cold and warmth, pain and pleasure. It does not even know it is a person for it is still unaware of the world as separate from itself. The sensory experiences of early months, therefore, are the all-important prelude in which the theme is quoted simply, to be restated and elaborated later, perhaps in a harmony which grows with the eager acceptance of safe and happy relationships, perhaps in discord from rejection of a seemingly hostile world. The theme itself may be serene or restless, confident or uneasy, flowing or halting, of love or of hate. Which of these opposites predominates will depend very greatly on the provider of the earliest experiences—the mother. If she can nurse her baby gladly with a full and timely breast she will have given him the first experience of needs supplied and satisfaction achieved which leads gradually on to confidence and love. If her breast and her compassion are withheld through hatred, indifference, mistaken ideas about regularity, or even through unfortunate necessity, there may be engendered in the child an intolerable clash of desire and rejection. Such a development may not only cause immediate difficulties in feeding and behaviour, but may remain throughout life as an unconscious ambivalence. This internecine warfare may later on reach such intensity in predisposed persons as to find expression in aggression directed against the self—a characteristic of the melancholic position and of suicidal impulses in that setting; or it may result in suspicion, fear and hatred through projection on to others of the intolerable negative component in the conflict. Dramatic events such as these are happily rare, but lesser degrees of a similar situation are common and give rise to much indecision, anxiety, depression, suspicion and fear.

The early period of infancy when the baby is (or should be) at the breast determines the basic pattern of its relationship to persons and things outside itself. Later the breast is replaced by the mother-as-a-person, milk becomes kindness and love, fondling and play lead to affection and confidence. In subsequent training the pattern is repeated with variations caused by the impact of new people—father, brothers and sisters—and new experiences—pots for nappies, cots for cradles, biscuits as well as milk, chewing instead of sucking. All these come to have not only a sensory but also an emotional significance for the growing child, and are the means by which he relates himself happily or otherwise to the world as he gradually finds it. They are the channels through which the world is mediated to him. They are also the means by which he attempts to manipulate his environment to suit his still-incompletely-renounced demand for immediate pleasure and satisfaction. If his efforts meet with failure on all sides through cruelty, neglect, ignorance or indifference, he will either retire puzzled and suspicious into his own fantasies, or react more violently with fear, rage and aggression.

Basic Patterns

If these possibilities were confined to the years of infancy and were done with when childhood is over, no great significance could be attached to them. The facts are otherwise, however. Although the experiences of early years can seldom be recalled to consciousness by taking thought, special analytic methods have shown beyond doubt that these memories remain at an unconscious level. More important still, they continue to carry the emotional attitudes and patterns of response which belonged to them in infancy and which may still operate strongly in making adult persons speak, think and behave in irrational ways foreign to a mature personality. Especially is this so if the grown-up person is faced with difficulty, danger or frustration. It is then that he tends to fall back on his earlier and less evolved modes of response, to revert to childish ways, to take refuge in fantasy, to feel primitive rage or panic, to become the victim of his old struggle between love and hate. Are not these the signs and symptoms of what we call neurosis and mental illness? If this be agreed then the quality of rearing in infancy and childhood takes on a new significance. It is no mere question of the inculcation of routine habits of behaviour which will be socially acceptable, important as these are. It is rather a matter of the formation of basic patterns of feeling and response which will be resorted to again and again. If these are sound, healthy and flexible, the mature person will be correspondingly happy and secure in all save the most adverse conditions; if they are compounded of doubt, conflict and anxiety, the adult will find himself in emotional difficulty and distress, or even in frankly abnormal modes of behaviour, whenever he has to face situations which cannot be compassed by rational means alone.

Good homes are good for children. Bad homes are almost as bad as none. The quality of the emotional atmosphere is the most important single influence in the family situation. It depends not so much on how the parents behave as upon what kind of people they are. Intellectual and moral integrity, breadth of sympathy and understanding, far outweigh mere rectitude or pseudo-scientific precision. Psychological knowledge, valuable as it is, needs insight to make it effective in guiding the family into healthy attitudes, free from prejudice and tension. Homes that are physically broken are doubtless a first-class disaster for the children. Homes which are emotionally disintegrated are more subtly but none the less surely destructive.

At school the social horizon widens. The child now senses more keenly the polar tension of self and society. The effective reconciliation of this conflict is a main function of education. Failure in this task exposes the growing boy or girl to the risks of unhealthy resort to childish behaviour and withdrawal, or on the other hand, to the development of

overcompensatory aggression. The school years bristle with opportunity for pupil and teacher alike. The teacher who is emotionally distorted and devoid of insight is a danger to the mental health of his pupils. A well-poised teacher on the other hand, whose attitudes are sound and free, who is blessed with humour and who has taken the trouble to understand himself as well as the children, can do much to straighten out the twisted ones and is a potent influence in the maturing of all his charges.

Social and Physical Influences

Modern society becomes increasingly complex. Communications multiply, jobs are fragmented, economies wobble, wars become more destructive, independence vanishes, the crafts decay, religion seems to lose grip. It is surprising that under these disintegrating pressures men have retained their mental balance as well as they have. Yet there is good evidence that, although the severer forms of mental illness have not apparently increased, minor neuroses, apathy, anxiety, resentment and the loss of zest are widespread.

Time will tell whether these symptoms of social sickness will grow in intensity. They appear to be likely to do so unless some way is found of restoring to men and women a feeling of individual value and a sense of purpose which transcends the limits of mortality.

The brain is the instrument of mind. When the instrument is damaged the clarity and the harmony of mental life are impaired. In old age, when brain cells decay, confusion appears. Blood vessels narrowed and hardened by disease starve the brain of oxygen. Toxins from infective conditions do the same. Even an attack of influenza can dull the intellect and depress the emotions. Alcohol and drugs in excess act as slow poisons to brain tissue. Many degenerative nervous diseases of obscure origin impair the intellect, disturb the feelings and distort the social behaviour of the sufferer.

Man Behaves as a Whole

The trite observation that all illness has both a physical and psychical aspect is now outmoded. Man is a psychobiological organism and behaves as a whole. Even his environment is " selectively integrated " into his behaviour. This being so, the understanding of illness involves the understanding of the person in all aspects of his spontaneous and responsive activity. Men are not mechanisms which " react " ; they are organisms which " behave ". Included in this behaviour is that which we call mental life. It is to be expected, therefore, that in addition to the grosser organic damages to the instrument of mind, there is an infinite complexity of action and interaction at all psychobiological levels

which will find at least some of its expression in variations of mental function.

A clear heredity and a good upbringing in the first ten years are the surest guard against mental illness. The former is a counsel of perfection ; but greater knowledge of genetics and its application in a social eugenic policy and in the gradual development of a eugenic conscience will tend towards the breeding-out of unhealthy stocks. Some nations have already legislated for a eugenic programme. In this, as in most human affairs, " ripeness is all." The fruits of knowledge in this field still grow and one day may yield a rich harvest in human happiness.

Can Health Education Help?

Can people be taught to rear their children wisely ? Some parents are hopelessly distorted, ignorant or beyond access ; most are well-disposed and would listen to unassuming advice and experienced information. There is a great opportunity here for the extended use of radio. Talks should always be simple, humorous if possible, pedantic never. Then fathers could listen without the risk of apoplexy, and mothers might find in them an excellent excuse for getting the children to bed !

Schools should have a psychiatrist as a senior member of the staff. He should be no academic psychologist, but an experienced clinician with analytic training, with both feet firmly on the ground and a family of his own. His function should be threefold—(1) To teach the teachers how to deal with themselves, and to help them to acquire some understanding of their motives, their eccentricities and their difficulties. (2) To exert quietly a general influence towards a more insightful management of human relationships throughout the school. (3) To devise a programme of simple instruction in elementary human psychology which could be given mainly by the teachers under his guidance and, more specifically, to small groups by himself.

This idea may provoke some opposition ; but it offers the most promising opportunity of applying knowledge and insight at the point where it will be most helpful for the upbringing of future generations.

Society has a duty, through its governing groups, to arrange its material existence so that its individuals will not be subjected to deprivations and pressures which are inimical to mental health and happiness. This end is too easily obscured by the detailed tasks of hand-to-mouth living. For many the road is so bestrewn with obstacles and pitfalls that they must needs look downward all the way. Yet " Where there is no vision the people perish." The restoration of the vision and the removal of the cloud of material preoccupation which obscures it are the greatest social tasks of our time.

Hlth. Educ. J., 1949, 7, 66—73

HEALTH INTERESTS OF CHILDREN

By Arthur J. Lewis, Jr., A.B., M.A., *Principal, University Park School, Denver, Colorado, Public Schools.*

One of the most difficult problems facing health educators is that of making health instruction functional, that is, helping children to develop desirable health habits, attitudes, understandings and appreciations. Unfortunately, knowledge of health facts does not always ensure desirable health behaviour. A teacher may do an excellent job of instructing his pupils to select proper foods, only to find that they always choose ginger beer or lemonade instead of milk for their lunch. Health information is necessary, but instruction must go a step further and help children to live healthier lives.

The Denver, Colorado, Public Schools are attempting to develop a functional health instruction programme which will extend through all age groups from 5 to 18 years. As a first step in this development, a committee of four classroom teachers was given time to do some research in the field of health instruction. This committee was assigned the task of identifying the kinds of health experiences which might be provided for children in order to help them to develop desirable health behaviour.

The committee soon realised that before they could select these experiences they needed to know more about the health needs of children, their health interests, and their developmental characteristics. Accordingly they set up a series of projects to discover and gather data in these fields. Health needs have long been recognised as a valid basis for curriculum building. Certainly, a knowledge of the health problems that confront children is valuable in planning for health experiences. Health interests were studied because the committee felt that instruction might be made more functional if the experiences selected and the activities provided were related to these interests. The developmental characteristics of boys and girls often provide leads as to the health interests and needs of children. For example, the fact that children aged 9–10 have sufficient muscular co-ordination to ride bicycles indicates the need which they have for learning bicycle safety at this age.

Many studies have been made of the health needs of youngsters ; as a matter of fact these needs have been used as a basis for most of the health curriculums and text books that are in use. Developmental characteristics have been carefully studied and reported.

No studies have been reported on the health interest of children at each age level. For this reason the committee decided to do some original

research which would identify some of the health interests of the children in the Denver, Colorado, Public Schools.

A large amount of material was collected in all three aspects of the study, in needs, interests, and development characteristics. Of all of this material, the information on health needs and developmental characteristics is most familiar. It is now our purpose, therefore, to report some of the highlights of the study of pupil interests.

The Investigation

Several techniques were tried for determining pupil interests in health. These techniques included using interviews and check lists with pupils, parents, and teachers. All instruments were organised around 18 areas of health, such as first aid, structure and function of the body, dental health, nutrition, sex education, and the like. After trying these various devices, the committee found that the most valuable technique to use was a pupil check list consisting of 250 items. Each item indicated some activity relative to health or health instruction, which the children could engage in ; for example, one suggested activity was to draw a diagram showing the structure of a tooth. The pupils were given the opportunity to respond in three different ways to each item : liking to participate in the activity suggested, disliking to participate, and being indifferent to participation.

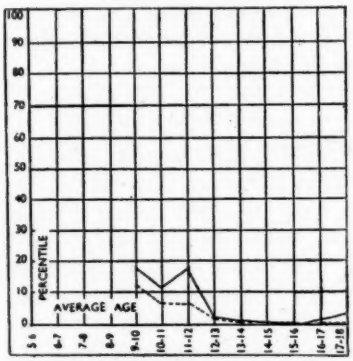
After the interest index, known as the pupil check list, was completed, it was necessary to select the pupils who would participate in the study. Since there are 50,000 children enrolled in the Denver, Colorado, Public Schools, it was impossible to include all of them. Therefore, 3,600 children were selected to participate. These pupils were carefully chosen from the various socio-economic groups, so that they would be representative of Denver children. Because of reading difficulty, it was impossible to use the index below the age of 9, therefore, the 3,600 children using the index are selected from ages 9 to 18. Teacher interviews were used to identify health interests in children from 5 to 8+.

Before the index was given to a group of pupils, the examiner spent a good deal of time explaining the purpose of the research. The students were generally quite glad to be a part of the study, and were also pleased to think that their interests were being considered. The results showed that the students were surprisingly frank in their checking of the index.

To simplify interpretation, the pupil responses to the index were graphed. In this graphing the responses of boys and girls were kept separate. Obviously it would be impossible to present all 250 graphs here. However, it is possible to examine twelve rather significant graphs from the areas of dental health, nutrition, physical fitness, personality development, and sex education.

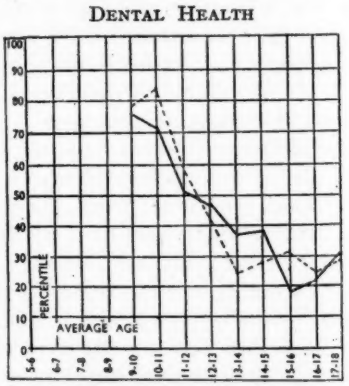
The Results

Graph 1 shows what the students thought of a rather typical activity in health education classes. The black line represents the response of the boys, the dotted line, the response of the girls. The numbers across the bottom of the graph show the ages at which the responses were made. As will be recalled, it was impossible to use the index below 9 years old, because of the reading difficulty involved. The numerals to the left of the graph show the percentile ranking of the interest indicated in the item as compared with the interest in the other 249 items. For example, the graph shows a percentile ranking of only six for girls of 10–11. This means that these girls indicated a greater interest in 94% of the items, than they did on this item. The degree of interest in the item was determined by the number of pupils that indicated that they would like to participate in the activity.



1. To draw a diagram showing the structure of a tooth

So much for the mechanical set-up of the graphs. What does this graph mean to health teachers? The results shown here would definitely indicate that this is a poor activity to use in the teaching of dental health. Some might argue that it does the youngster good to do things that are disagreeable. In reply to this we might say that if performance of uninteresting tasks builds character, then this activity must be a great character builder. If, on the other hand, the purpose of health education is to interest youngsters in developing better dental hygiene habits, we will need to look for other approaches.



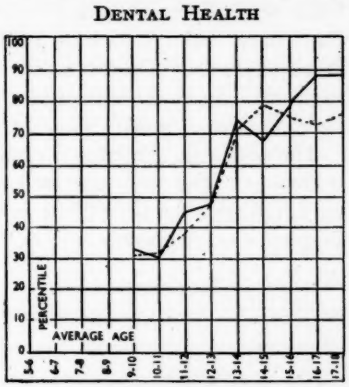
2. To learn what foods are best for your teeth

In passing it might be said that the activity of drawing generally brought a response indicating low interest. However, this activity might be very valuable to use with the children that enjoy drawing.

The approach to dental health suggested in graph 2 may be a valid

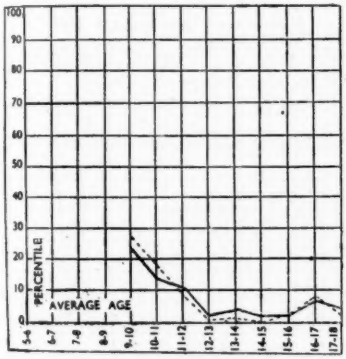
one to use with younger children. The fact that the interest so rapidly declines as children get older is readily explained. The average youngster of 13–14 usually knows, or thinks he knows, the foods that are best for his teeth. He, therefore, is not too interested in this activity.

Graph 3 differs from the two previously examined, in that the interest in the activity increases as the children become older. This is a possible approach to be used in teaching dental hygiene to children over 12. This high interest of adolescent youngsters



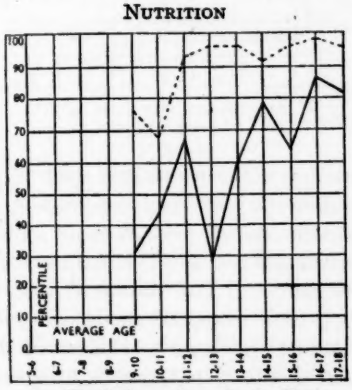
3. To have your teeth defects corrected

is probably explained by the fact that dental defects mean to them dirty teeth or any other characteristic which interferes with their appearance or fitness.



4. To listen to talks on vitamins

It is illuminating to see in graph 4, what students often think of health talks. Judging from the results, this would be one of the best ways to alienate the 12–13 year old. Another item, "To find out how vitamins protect your health," scored much higher at all age levels; this indicates the value of relating health instruction to the individual pupil.



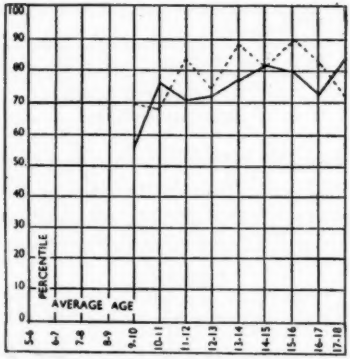
5. To find out how food affects your complexion

Since proper nutrition habits are so essential for good health we must find some way to help youngsters develop desirable nutritional practices. Graph 5 suggests one approach which might be very valuable.

Educational psychologists say that behaviour is changed as the individual solves a problem. For example, the psychologist would say that there is a much better chance of an individual's selecting an adequate diet to help him overcome a faulty complexion, than there is that he will choose foods wisely because teacher says that he should. Radio advertisers in the United States have long used this psychology and apparently with excellent results. Thousands of dollars worth of tooth paste is sold daily to people who have been led to think that its use will help them to solve their problem of getting along better with other people.

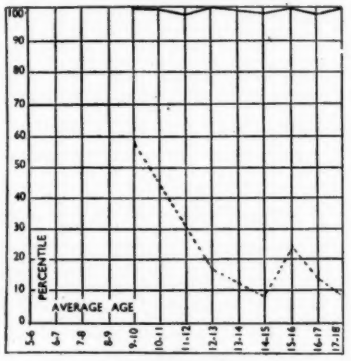
The reason for the interest evidenced by the girls as shown in graph 6 is obvious. The boys' interest is probably closely related to their desire for achievement on the athletic field as indicated by the next graph. This suggests another possible approach to the teaching of nutrition.

NUTRITION



6. To find out how food affects your weight

KEEPING PHYSICALLY FIT

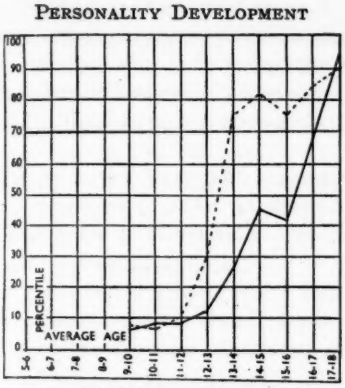


7. To learn how to build muscles

You may have to look twice at graph 7 in order to find the line indicating the boys' interest because it is so close to the top. Apparently any health education which could show boys how to build muscles would be quite successful. This helps to explain the value of such advertising slogans as "The Breakfast Food of Champions." Unfortunately, this approach would be ineffective with a group of girls. The declining interest which girls evidence in this activity may be explained by the fact that they are afraid that the muscles will be built in the wrong spots.

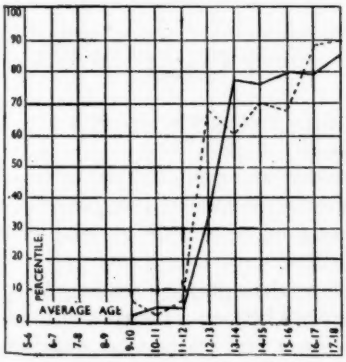
You will notice that the item portrayed in graph 8 (opposite) is from the area of "Personality Development," an aspect of mental health. Certainly mental health is a most important phase of health education. As one examines this graph, he may have a tendency to wish that he were 9 years old. Apparently at this age we have very few problems. Those

in the 17–18 age group, on the other hand, seem to have many problems that they would like to discuss.



8. To discuss problems of young people

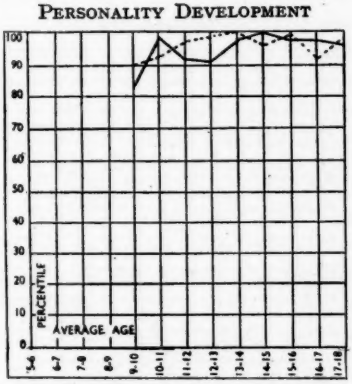
As a matter of fact advertisers have successfully capitalised on this concern in order to sell their products. For example, in the United States one well known soap is sold on the strength of the slogan " Be popular—use Lifebuoy."



10. To learn how to select a husband or wife

How much help are our schools giving to youngsters as they try to solve their many problems ?

It is probably safe to assume that the high interest in getting along with other people portrayed in graph 9 continues throughout life.

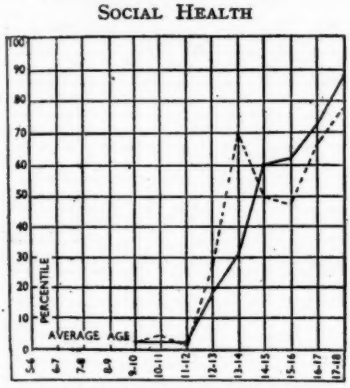


9. To find out why some people like you and others don't

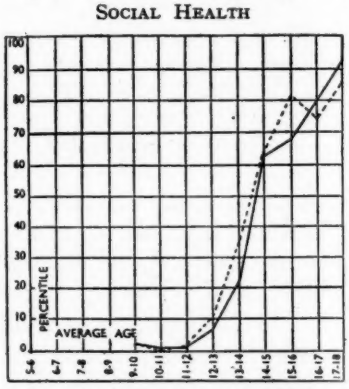
Perhaps educators would not wish to go quite so far as to guarantee popularity through cleanliness. Nevertheless, a good deal of functional health instruction can be aimed at helping youngsters to solve this problem. For example, they can easily be shown the part which a happy disposition plays in getting along well with other children. They can then soon discover the value of good health as it relates to a happy disposition. At this point, proper rest, adequate nutrition, and good hygiene become means of solving the problems of getting along with others.

The name of the area used in graph 10, Social Health, includes family relationships and sex education. This graph shows the intense interest that youngsters over 15 have in learning how to select a husband or wife. This choice is certainly one of the most important ones that an individual faces and our older youngsters want help with it. It is disappointing that our schools seem so busy teaching so-called essential academic subjects, that they have no time to help youngsters with their problems in this area.

It is important to note the sudden increase of interest evidenced by girls of 13–14 in social diseases, as shown in graph 11. This interest is much higher than that of boys of the same age. This tendency for girls to



11. To find out some important facts concerning social disease



12. To learn about the effects of petting

evidence interest earlier than boys is found throughout this area and is probably due to the earlier physical maturity of girls.

Certainly, the high interest shown by boys and girls of 17 and over has significance for health educators and parents. Whenever youngsters have this much concern in a subject, they are going to find the answers from some source.

When graph 12 is compared with the previous graph, a striking difference is noted. The interest shown by pupils between 12 and 14 in learning about the effects of petting is much lower than on the other questions in social health. On the other hand, 17-year-olds apparently have a great interest in learning something about the effects of petting.

A summary of this study of the health interests of boys and girls shows that their chief concern is in the area of personality development. There is also a high interest in social health among children over 12. Boys showed a high interest in physical fitness at all grades, while the girls evidenced concern about their personal appearance.

Application of the Results

What implications does this report have for the health instruction programme in school ? A description of the ways that this research has affected the health teaching in Denver may help to answer this question.

A realisation of the nature of children's health interests has done much to change the approach used in health education. Teachers are organising their instruction around the concerns and interests of their children in an attempt to improve their health behaviour.

The value of this technique was demonstrated during the first month of school in 1946. The opening of the Denver schools was delayed two weeks due to an infantile paralysis epidemic. At a meeting of all the elementary teachers (i.e. those in charge of age groups from 6–12), it was pointed out that practically every youngster was concerned with the prevention of this disease, and that the washing of hands might help to reduce the chances of infection from the disease. Teachers decided to show youngsters the value of hand washing in the prevention of infantile paralysis. The result, twice as much soap and paper towelling was used in the elementary schools during the first month of school in 1946, as in any month the previous year. The importance of clean hands had often been pointed out to children before without too much effect ; but, when they thought it would help them to solve their problem of preventing this disease, their behaviour was changed.

For those interested in seeing the complete results of this study, a report of the research has been published.*

In conclusion, this research has given the following directions to the health instruction programme in the Denver Public Schools.

1. A realisation of the health needs and interests of pupils has changed our concept of the time in a child's life in which a given health experience is effective, and has indicated the necessity for including such areas as personality development and social health in the curriculum.
2. Health instruction will be more functional if it is organised around the children's needs and interests. This precludes a rigid course of study, and indicates the necessity for each teacher to identify the needs and interests of the children in his group.
3. There is a need for a twelve year health instruction programme which will include both incidental and direct teaching.
4. New materials and consultative services must be available to teachers to continually invigorate the new curriculum.

**A copy of this publication may be obtained by sending a cheque for $1.25, made out to School District No. 1, to the Department of Instruction, Denver, Colorado, Public Schools.* [Editor's Note: Owing to present currency restrictions such publications can be got only through a book dealer with licence to import books from America.]

Hlth. Educ. J., 1949, 7, 74—80

THE BIOLOGICAL ASPECTS OF HOUSING

By A. Moss, M.R.San.I., Assoc. M.C. of T., *Senior Housing Inspector, City of Manchester.*

THE city, town, village and house are units for living. But what do we mean by living? Do we mean the mere physical existence, which as Shakespeare says "differs not from the stalling of an ox" or do we mean something more—wider and fuller than this? Biologically life has been defined as the ability of a being to affect and be affected by its environment. The greater our ability to correspond with our environment the fuller, the more abundant our life. I believe this to be true not only of our physical but of our intellectual and spiritual environments. The more opportunities we can provide in our environment for wider physical experience, for greater beauty, for aesthetic taste, for social contacts, for intellectual exchange and for meeting of kindred spirits, the fuller and more abundant will be our lives and the more successful as a plan for living will be our planning.

In the past, from the days of Chadwick and his colleagues, we have been busy cleaning up the dirt—"making do with and mending" our older properties, controlling our newer building to the extent of providing only minimum bye-law requirements. This has been and still is a tremendous task.

We still have overcrowding, lack of houses and huge numbers and areas of sub-standard houses, obsolescent houses, and obsolete houses. We are crying out for more building. But what are we going to build? How are we going to build? Are we contemplating the same monotony of our pre-war building, the repetitive plan? Have we stood still since the inter-war period or have we had second thoughts? Whilst waiting for our towns to materialise can we still have second thoughts so that when we come to build we shall do so with decision and foresight and to a cohesive plan? What then was wrong with our inter-war building and planning?

First: Our plans pushed the country further away from the town dweller and left us with central areas falling into decay—like a rodent ulcer with its inflammatory ring spreading ever wider, and its centre sloughing without healing.

Second: Our housing estates sprawled out in monotonous repetitive designs without any organic centre, and with no individuality of their own, and no centre of interest or pride for their resident families.

The House and the Community

Before the days of the industrial revolution the community interest found expression in the village, the church, the school, the village green and pub. The squire, the minister, the doctor, the labourer, the farmer, the innkeeper lived with and knew each other. All classes found in mixing a common interest, a common pride and a friendly rivalry with adjacent villages. Can we not re-create that neighbourhood spirit by basing our planning on the individual whilst providing for a diversity of individuals, making each community a social entity integrating into the life of the city or town? To do this we must first divide the area of the town or city into practical units with communal interests sufficiently large to allow of the economic creation of communal features, subdividing those units into smaller and more intimate communities to enable each to have its own character and individuality yet be sufficiently in contact with the central organising authority to make itself an integral part of the whole. Further we must develop our inner areas approximately to the standards of our suburban districts. Here let me mention another biological aspect—the breaking up of slum mentality. Frequently the population of large clearance areas is transferred to new housing estates row by row as houses are ready. What is the result? Mrs. Jones is still next to Mrs. Smith and the Robinsons are only in the next avenue. A slum has been successfully transplanted to a hygienic environment.

Let us take another example. These families are separated, offered houses nearer to their work or to that of some members of the family. What happens? At first they feel deserted and even looked down on. But before many years go by they will be as good as their neighbours, and their children, attending the same schools, will mix and gradually fit in to the new environment.

But we must have variety in the district for another reason. People must not feel themselves labelled by the type of dwelling in which they live. Further, not everyone wants a garden. Some, for example, business girls and elderly spinsters, want flats and possibly service flats. Older couples want simpler accommodation but want also the company of neighbours. They do not all wish to be relegated to pre-graveyard dwellings such as almshouses and old persons' dwellings. So, attached to our houses in our various districts there should be dwellings for old people where an unofficial or even an official eye can be kept on their welfare. In fact I believe one of the communal activities that might well eventuate would be a voluntary committee which would concern itself with the visiting and care of its old people.

This lay-out would give variety to our planning, and to our scheme in general and would give more opportunities for people to get to know each other. Our flats would be surrounded by public open space sited in

park-like spaces, and our houses would be surrounded by public gardens. Our roads would become parkways and our bowling greens, tennis courts, etc. would fit in with the general amenities of the scheme. We should travel through our parks to our daily work instead of through miles of meaningless streets with a façade of shops hiding the drabness behind. The same amenities would be available within each district, each neighbourhood and each community, and the requirements of the administrative or city centre could be more precisely patterned as its adjuvant and ancillary services in the districts began to take shape.

In thus discussing the setting of our homes one of the first problems that confronts us is the dinginess, the overall smoke pall of many of our larger towns and cities.

Statistics point to various aspects of the problem—its effect on human life in loss of fuel, in reduction of crops, in increased laundering and wear and tear on building materials and clothing. Many of us have grown to regard the smoke of towns as inevitable and only on our holidays at home or abroad do we realise what effect a clear sky can have on us. But it was the aggregation of factories and low amenity houses in the industrial period which made what Mumford describes as the Insensate Industrial Town. So, to the greatest possible extent we must bring the country back to our towns by agricultural belts or wedges and, by the judicious localisation of heavy industry and the modernisation of power units in our factories and of domestic heating in our homes, remove the smoke pall which acts as a filter withholding the health-giving and vitamin producing rays of the sun.

The House as a Shelter

Let us now look at houses individually. Man's first need of a house goes back to the stone age when he needed shelter from the elements and protection from his enemies, human or otherwise. We trace its development, first in caves or holes in the ground, lake dwellings, huts, cabins of all descriptions until we arrive via "brick boxes with slate lids" to our present modern houses. The old requirements still remain —protection from the elements, coolness in summer, warmth in winter, light and air. Food storage was not needed in prehistoric days—there was more fresh killed meat than we have today.

What, then, do we want of our house today ?

Adequate Heating

It should be capable of maintaining an equable body temperature. We live on a very narrow margin of body temperature (95 to 105° F. roughly), and conditions which tend unduly to affect that soon cause

distress. We maintain our body temperature by auxiliary heating, and if our houses can be heat insulated our need of fuel is reduced and our heating efficiency increased.

Freedom from Dampness

Dampness has the effect of increasing heat losses. The heat is used to supply the latent heat of evaporation. Cooling power can also be controlled by the rate of air movement. The house must be adequately protected against dampness from the site, the walls, the roof, and rising dampness. Concreting of the site and effective damp-proofing of all walls particularly in old houses is a necessity if respiratory and rheumatic complaints are not to be encouraged or aggravated.

Light

Because of our closed-in existence in towns, light has become a vital factor. The smaller window with the large sky angle would probably meet the hygienic requirements of the country dweller who lives largely in the open air. But in the town and city, opposing rows of brick walls obstruct the free entry of the sun's rays so that cleansing becomes difficult and eyesight is sadly strained. The tonic effect of sunshine in synthetising vitamins in our bodies is lost. Psychologically, darkness tends to depression whereas a well lighted room brightens one mentally and physically. Again, the sun's rays are natural disinfectors, and the access of light and air to the dwelling has a powerful bactericidal action on droplet infections, particularly when they are floating in a finely divided state in a medium unfavourable to their growth. Adequacy of window space in itself may not be enough if those windows are over-shadowed and there must, therefore, be proper spacing of houses to prevent this.

Air Space and Ventilation

This brings us back to the number of houses on the site and the number of people occupying the site, the house or the room.

The biological fact again is that the body is a machine which does its own running repairs whilst it is working. Fuel in the form of food is put into the body and the body mechanism converts this either into energy or into material to build the body or to repair the body waste. The waste material must however be removed, and this is done in part by the lungs. Good ventilation is therefore important. In particular, since we spend one-third of our lives in bed our bedrooms should be well-ventilated, with adequate space to prevent droplet infection by direct discharge and sufficient air exchange to maintain adequate lung action.

A Good State of Repair

The maintenance of a good standard of repair is obviously an essential to the house as a shelter. Disrepair, crumbling plaster, rotted woodwork and leaky roofs discourage tenants' efforts toward maintenance and produce a sense of frustration. Pride in the house and home are assets which can be used to promote a sense of well-being and an effort towards vigorous health.

The House as a Workshop

Now let us look at the house as a place for work. Much of the work of the house is concerned with food—its storage, preparation, cooking. In the past this was of little concern to the builder or owner, and frequently nothing more was provided than open shelves and cupboards over a gas meter, alongside the living-room fireplace or in dark cellars difficult to clean. The coolness of the cellar was a point in its favour, but contamination by vermin was an ever-present possibility.

This absence of facilities for food storage led to the uneconomic purchasing of food in small quantities, at ' corner shops ' where ready prepared foods were sold. Food so bought was expensive and tended to monotony of diet if not actually to an unbalanced diet. The ' corner shop ' became the larder of the smaller house. Again, with a cold water tap over a shallow sink in a scullery and the living-room fire as the only facilities, housewives were not inclined to undertake much cooking, but with the advent of gas and electric cookers they became more ambitious. But equally necessary was a readily available supply of hot water for the cleansing of dishes, cooking utensils, for domestic washing and the general cleansing of the house. For mending, sewing, cooking, cleaning, light must be adequate and must be so positioned that a woman is not working with her back to the window. We have grown to recognise the necessity of time and motion study in the effective organisation of industry. There is no reason why easy working should not be the guiding principle, therefore, in our design of kitchen and scullery and this entails siting of fittings as well as the other things I have outlined.

Then hobbies, homework and entertaining must not be forgotten. The house should belong to the family. There should be in our living accommodation one room where quiet and tranquillity for study or hobbies can prevail. There should be storage space in or in close association with the house for those necessary accessories of family life, prams, cycles, toys, garden tools, etc. And the garden itself should be regarded, not only as a hobby, a pleasaunce, but as utilitarian open space where the child can take its airing, the washing can be aired, bleached and sun dried and where the tenant can find recreation in the cultivation of his plot.

The House as a Home

What do we desire of the house as a home ? The family is certainly the unit of corporate life. Here we are not allowed to remain ignorant of our faults. The corners are rubbed off and we learn in the process the adjustments we have to make between ourselves as individuals and the world in general. These daily contacts should be made as free from irksome irritation as possible however, so that the business of growing up together can be pleasant. There should be adequate room for sleeping, eating, hobbies, recreation, entertaining, and provision for privacy for baths and personal ablution so that there can be that necessary personal pride in appearances. Facilities for games and exercises are an essential part of our planning and they should be so near to our communities that they can readily be utilised.

The design for living turns to a large extent round the activities of the mother to secure her maximum efficiency with minimum effort. Obviously the house, her domain, must be planned with a view to her activities. Her working conditions should be of the best—light, well ventilated kitchen and scullery, bright surroundings and labour saving devices easy to work and handy of access.

But let us not imprison her within four walls. Give her interests outside the home and so reduce monotony by group meetings, women's guilds, mothers' meetings if you like, but let her meet others, exchange recipes, discuss methods, enter into the general life of the community, its politics and policy. These interests will widen her sphere of activity, increase her effectiveness as a citizen, a wife and mother. Here the health centre and clinic with its talks on diet, child management and kindred problems ; talks or discussions on social activities, on clean food campaigns and modern methods of securing clean food offer tremendous opportunities to the health and social worker. Life for the housewife ceases to be humdrum or devoid of opportunity and becomes an interesting affair, full of experiment, offering scope for intellect as well as for muscle.

The Main Points

We have then, established eight important points :

1. Every family has the right to a decent house with adequate amenities suitable to the size of the family.

2. The house as a unit must be a satisfactory shelter, a pleasant place to live in ; in fact a home in which leisure, work, studies, hobbies, entertaining can take place and where ease of work, ample storage and other amenities have been provided.

3. Rent pools should be continued so that the level of family income need not of necessity determine the type of house a family must occupy. Such a system allows of the house fitting the family.

4. The siting of the house, whether as a flat, a terrace, a semi- or detached house should be as varied as possible, but contributing to the general plan, with private garden space, public garden space, playing fields, rest parks centred round communal buildings, schools, health centres and shopping centres.

5. Families need to be mixed in communities where they can get to know each other and learn to appreciate each other's viewpoint. The segregation of families into categoried estates must be prevented.

6. An overriding organisation must integrate these scattered units into neighbourhoods, districts and towns. The Civil Defence pattern sought out the natural group leaders who became the link and liaison with central authority ; a similar system could foster a community spirit which might well solve some of our local problems.

7. Work should be available in or easily accessible to the various communities.

8. The older portions of cities and towns, after providing a civic centre, should be replanned to a standard near to that of the outer areas.

History is a record of the past for the guidance of the present in the planning of the future. Let us learn from the past that towns of the pre-1800 period were composite communities with civic pride and interest and that in our outsprawling we have lost this. Let us learn, too, that hurried, unplanned building costs life ; that aggregation of houses, factories, etc. produce smoke and loss of health-giving light and air ; and that these things have been avoided elsewhere. Let us learn from the low amenity of houses of a hundred years ago and from the cheap and shoddy building of the 1870's and determine not to leave a similar legacy to posterity. Let us learn that it is possible to achieve some of the beauty of the countryside in the town, and let us take to the countryside some of the urban amenities so that the lot of our land workers will be interesting and tolerable.

Above all, let us get our ideals defined. Our standard of requirements must not be lowered just for the sake of convenience. By all means explore our new materials, by all means try new methods, but let us be quite sure of our ground and that the alteration is a move forward and not backwards. Let us realise that a house, like a car, has a limited life, that its depreciation should extinguish its cost in a definite period, and that sinking funds should allow of its being replaced as necessitated by time and the changes that come with time.

We need to rebuild our towns almost completely. We have a great chance to plan well. Let us give ourselves wholeheartedly to that task.

Anatomical teaching in the early 14th century. The professor directs the dissections. (Title-page of the Leipzig edition, 1493, of the *Anathomia* of Mundinus.)

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MILESTONES IN MEDICINE
6. THE RISE OF ANATOMY IN THE MIDDLE AGES

By E. Ashworth Underwood, M.A., B.Sc., M.D., D.P.H., F.L.S., *Director, The Wellcome Historical Medical Museum; Hon. Lecturer, University of London.*

With the rise of the universities a new factor appeared in the teaching of medicine. Among the earliest of these institutions were Paris and Bologna, and between 1200 and the end of the Middle Ages about 80 universities were founded in Europe. Of these 20 were in Italy, 19 in France, 14 in German-speaking countries and 5 in England and Scotland. It was in the University of Bologna that the birth of anatomy first occurred. Why it was at this city is not quite clear, but the fact that Bologna was a famous law school is probably in part responsible. Post-mortem examinations were obviously of great importance in certain legal cases, and from the examination of the injuries which had caused death it was not a big step to dissection of the body for the sake of anatomical knowledge.

Taddeo Alderotti, who worked at Bologna and died about 1300, was one of the earliest to till the new field. Several of his pupils later became famous, and one of them, Mondino de' Luzzi—also called Mundinus—succeeded in writing a primitive work on anatomy which was used for 250 years. Mondino was not only a lecturer at the University of Bologna, but was prominent in the affairs of the city, and on at least one occasion he served as its ambassador. He began to dissect in person about 1315, and in the following year he wrote his *Anathomia*. In successive manuscripts it served to instruct generations of medical students. When it was first printed in 1478 it had still not outlived its usefulness, since many printed editions are also known. In this short work Mondino took a number of his terms directly from the Arabic. Although his descriptions were an advance on the few manuscripts which were then used, he copied certain errors from Galen and from the Arabs. For example, he described the liver as having five lobes, and the uterus as containing seven cells. He described also the *rete mirabile* at the base of the brain—a network of vessels which exists in certain animals, but not in the human. The weight of his authority caused these errors to be accepted for generations.

It was however as a teacher that Mondino excelled. Until his time any

anatomical teaching which was done consisted in little more than the verification and expounding of the books of Galen. The professor—as is shown in the title-page of an edition of Mondino—occupied an exalted position in his chair, and the dissection was done by assistants. Though Mondino dissected in person, after his death the old custom re-asserted itself and was not changed until the scientific renaissance and Vesalius.

THE EMPIRE RHEUMATISM COUNCIL

This Council was formed under the Chairmanship of The Rt. Hon. The Lord Horder, G.C.V.O., F.R.C.P., in 1936 and it has since progressed considerably. At the recent Twelfth Annual General Meeting the President H.R.H. The Duke of Gloucester said "The intention of the Council is quite simple; to conduct an all-out scientific attack upon rheumatism and to support our scientists and research workers in their determined attempt to find an answer to the rheumatism problem."

At its inauguration as a voluntary organisation the stated aims were: to organise research into the causes and means of treatment of rheumatism, arthritis, fibrositis and allied diseases, to encourage teaching, and to stimulate public authorities to provide treatment. The fact that the public supports the Council increasingly is a testimony to the success of its endeavours.

As the title shows the Council is the link through which workers throughout the Commonwealth exchange opinions and in the official journal *The Annals of the Rheumatic Diseases* publish the results of their research. This journal has now been adopted as the mouthpiece of the American Rheumatism Association and the International League against Rheumatism.

The funds of the Council, voluntarily raised, are used to finance schemes of research approved by its Scientific Advisory Committee of experts on the various aspects of the rheumatic diseases. The Council itself employs full-time research workers and has a well equipped research laboratory.

Three courses of lectures per annum are arranged by the Council for the benefit of general practitioners and physicians training in rheumatism, and the Council has also stimulated authorities to take an increasing interest in these diseases and the Government has now promised to help sufferers under the National Health Service.

By constitution the Council is controlled by both non-medical and medical members and there is a strong representation of both on the Executive Committee.

The Scientific Advisory Committee studies and supervises research projects and tests new methods of treatment with the aid of statistical, economic and social advisers. The headquarters of the Council are at Tavistock House (N), Tavistock Square, W.C.1 (Tel. EUSton 8109), to which all enquiries should be directed.

The fifth in a series of notes on major voluntary organisations that undertake health education work.

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LEARNING AND TEACHING

By Stephen Wiseman, B.Sc., M.Ed.,
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It might be thought that the study of the best ways of learning and the most efficient methods of teaching is a matter mainly for teachers in schools. But when we pause to reflect it becomes most obvious that learning in the widest sense goes on right through life; and that, in addition, for most of us a good deal of our time is spent in trying to persuade other people to do things which they have never done before, or to stop doing things which have become habitual to them, just as the teacher does in the classroom. It is, therefore, a mistake to think that methods of learning and methods of teaching have little application outside the schoolroom—for all of us, a knowledge of technique and method will lead to greater efficiency both in learning and in teaching, and can bring us greater effectiveness both in our private and our professional lives. Quite obviously, too, it has special relevance in the many fields of health education.

A good deal is known about learning processes and the ways in which learning may be facilitated, as a result of experiment and research. Indeed much of the earliest work in experimental psychology was concerned with problems in this field. It is fairly easy to see why this should have been the case. A large proportion of the earlier work in psychology had derived from the introspections of the psychologist himself, watching his own mental processes at work, so to speak. But in the field of learning it was also possible to study mental *products* in a quantitative way—for example, by counting the number of words remembered after a specific learning period. And when experimentalists, realising the limitations of introspection and the study of their own mental products, determined to extend their techniques to the study of large numbers of *other* human beings, what could be more natural than that they should turn to the schools for an almost inexhaustible supply of docile subjects? The study of learning was an obvious and proper focus of research in such an environment, and a great deal of valuable knowledge has resulted from such educational research over the past fifty years.

However appropriate it may be that research on learning should be carried out in schools, this has had one unfortunate result—a certain lopsided development of research. Some parts of the field have been cultivated intensively, but other parts have been relatively neglected,

although there have been efforts in recent years to redress the balance. As an example of lopsidedness we may take the problem of the learning of muscular skills—we know less about this than we do about verbal learning, and this is perhaps not unconnected with the fact that our schools have given more emphasis to one than the other. But a much more serious lopsidedness emerges when we begin to consider learning and teaching from the point of view of the *adult* rather than the child. Now let us be careful at this point: we are *not* saying that the learning processes of children have been found to differ from those of the adult. Indeed, research has shown that they are a great deal more similar than some had suspected. Most of us feel that children learn quicker than we do, and that they " have better memories "—yet this is rarely true, provided other factors remain equal, factors such as motivation, interest and application. It is just in the study of these other factors that learning research has lagged behind, because for school children they are relatively less important; for adults, however, they are the prime factors which determine success or failure in learning in the great majority of cases.

Intellect and Temperament

The psychologist, in his study of human beings often divides their abilities and potentialities into two broad categories: On the one hand are the " intellectual " processes of knowing, perceiving, recognising, realising; on the other are the " temperamental " processes of feeling, striving, willing. Learning and teaching may be thought to be predominantly " intellectual " processes, but we are now aware that, although there may be some justification for this belief at the scholastic level, the successes and failures of adults in both learning and teaching are more often caused by the temperamental factors. A moment's reflection is enough to show the truth of this. How often have we explained, to friend or relative, the reasons why a certain course of action is obviously the only correct one, taking pains to demonstrate, logically and clearly, how this can be the only possible solution, and received their cheerful agreement—only to find them, in the event, taking quite a different course! More cogent still—think of the enormous amount of medical advice, from doctors and nurses, which is ignored by patients. Some of it, no doubt, proves ineffective because the 'teaching' is pitched at too high a level for the intelligence and comprehension of the untutored patient; but most of it is ignored, we know, because the patient " doesn't believe in it ", or he " can't be bothered ", or for some other " temperamental " reason. Sometimes it is extremely difficult to find the real reason for failure—and in many cases the patient himself is quite unaware of the real reason. Although more and more research is needed on the

" temperamental " side of learning, it is possible to suggest ways in which this kind of adult teaching can be made more effective, and to point out techniques which are most likely to be effective.

Three or four different *kinds* of learning may be distinguished. Of course in real life it is never possible to see one of these pure types—nearly every learning situation is a blend of two or more. But the distinction is a useful one for purposes of analysis.

Three Ways of Learning

Learning by rote is perhaps the kind of learning which most people regard as typical of learning as a whole. It is learning by heart, and is well exemplified by the child learning his multiplication tables, the student learning the first words of a foreign language, the probationer learning the multitudinous ' labels ' of anatomy. It is the kind of learning which many young children like and which most adults dislike. Notice one very important thing about this kind of learning—it has practically no connection with intelligence. It is not necessary to *understand* anything to learn in this way: all we need is effort, patience and continued practice. Its limitations are, therefore, considerable, although they are rarely recognised. This kind of learning is used again and again (by children and adults) in completely inappropriate situations. The teacher (and the student) should aim to use this method as little as possible—it is the last resort when all other methods fail. Certain things *must* be learned by this brute method, but by no means as many as most of us believe. When we must employ it, it is often possible to ease the learning burden by the use of tricks and mnemonics (e.g. Thirty days hath September . . . .). But when all is said and done, we must realise that this is the same kind of learning that the performing animal uses: give him the right signal and he produces the automatic response, without knowing why. And very often the response is elicited in the wrong situation, when a cue is misinterpreted. We all tend to fall back on this kind of learning when we cannot fully understand complex material, but this is always a confession of failure.

Learning with insight, with understanding, is the most important kind of learning with verbal and ' academic ' material. The child learning to read begins to integrate the rote-learning elements into meaningful patterns, and sees relationships between the elements of learning which are then used to extend knowledge and understanding. Reasoning in all its forms is the basis of this kind of learning, and it demands a basic degree of intelligence for its functioning. It may be, therefore, that a particular individual in a certain situation is incapable of learning in this way because of the limitations of his own intelligence. The solution is for the teacher to break down the material into simpler elements, capable

of being grasped and integrated, rather than to allow the learner to fall back on unintelligent rote learning. Many official pamphlets and pieces of propaganda fail dismally because the vocabulary in which they are phrased is at too high a level for the appreciation of those for whom the advice is intended. Many individuals fail to use this method because of a lack of self-confidence and a feeling that they are incapable of grasping the material presented. An important part of the teacher's job is to *lead* the learner and demonstrate to him that he is capable of understanding. The use of simple language and homely analogy is by far the most potent help in this, together with (and this is an essential) the ability on the part of the teacher to view the learner as an individual, with his own idiosyncrasies, assets and handicaps. Only by thinking of the learner as a *partner* with the teacher in the learning process can we create the right attitudes and approach the right goals.

Learning as training is exemplified by learning a game of skill, learning to drive a car, typing, using tools or instruments and so on. That is, all the different situations which demand of us a new *muscle-pattern*. We have used all the muscles involved hundreds of times before, and often in very skilled movements: now we are faced with integrating their action into a new complex pattern. We usually begin with an *old* pattern, but one as near as possible (as far as we can judge) to the one required. Then, gradually, with practice, we drop out those parts which are unnecessary or hampering, and eventually (perhaps) achieve the smoothness, the elegance, the seeming effortlessness, which are so strikingly characteristic of highly-skilled performances. Sometimes we never achieve this desirable result, for it seems that old habits and previous muscle-patterns interfere too much. This is not surprising, for we know how extraordinarily permanent this kind of learning is (e.g. riding a bicycle). And since bad habits are learned as easily as are good, we see that the most important thing for the instructor to remember is to *prevent* the formation of these bad habits by close supervision of practice —particularly in the early stages.

Social Learning or Learning Through the Emotions

Consider the way in which a young child learns not to swear—or the way in which the foreigner learns which particular swear-words are permissible in different kinds of company! This is the way in which we learn the appropriate and approved shames and fears, the correct inhibitions—in other words, *conformity* to society or the social group. Often one vivid experience is enough for learning to be complete and one hundred per cent effective—there are some bricks which we never drop a second time. Our opinions and attitudes are largely formed in this way,

and are often, as a result, highly personal and irrational. Sometimes, in fact, our attitude comes into conflict with our intellectual analysis of a problem—" I can't prove this, but I *know* I'm right ". Notice, too, that since this kind of learning is dictated by the social framework of custom and approval, it follows that different patterns of life will produce different results. Here, then, we find a ray of light on the problem mentioned previously—the ignoring of medical advice by patients. The doctor or the nurse may assume that their own ideals of diet or sleep or treatment are regarded in the same way by the patient, whereas a different culture-pattern has produced modes of thought and action which will prevent such advice being taken. Learning at the emotional level defeats learning at the intellectual level in this case.

Advice to Learners

As a result of the experimental work done, it is possible to offer advice to learners which is based on factual evidence and careful research. When dealing with ' book-learning ' it is always found that the rate of forgetting of learned material is very rapid during the first day or so after the learning period. It is, therefore, most important to *revise* any new work within twenty four hours. Such revision (which, with properly learned material, need take little time) prevents a large memory loss and ensures the retention of the material for a much longer period. This advice is probably the most valuable single recommendation which can be made—whether the learning period was lecture, lesson, demonstration or book-study, this early recapitulation of one's notes, or a " going-over " in one's head, pays handsome dividends. Indeed, this process of turning things over in one's mind at frequent intervals is not only a prophylactic against forgetting, but it is often of the greatest assistance in enabling one to see new connections and relationships between the items of knowledge, thus extending as well as consolidating the learning.

The ancient idea of the mind being a *tabula rasa,* a fallow surface waiting for the impress of outside stimulation, is now seen to be mischievously misleading. Learning is rather dependent upon the dynamic action and inter-action of teacher and taught: effort and direction are essential for learning, a passive absorption of instruction leads nowhere. The student's habits of work, too, may hinder or assist the learning process. " Little and often " is a good motto, especially for the unpractised learner. In his zeal, he is often tempted to draw up elaborate time-tables, in which two or three hour ' slabs ' of learning appear. Four periods of half an hour each will produce better results than one period of two hours. And if different subjects are being tackled in the same time-table, it is good advice to stop for a few minutes before going over to a new piece

of work—otherwise the previous learning may interfere with the new material.

Advice to Teachers

First it is always essential to *define the aim* of the learning quite clearly and simply so that the students know what is their goal. This should be a realistic goal, and directly related to the problems and needs of the students so that they do not feel that they are wasting time on stuff that does not matter. In the early stages of the study of some subjects the work may often appear to the untutored student to be lacking contact with his own realistic aims and ambitions—the definition of goals by the teacher, both for the single lesson and for the course, may do much to reassure him on this point and thus enable the student to persist in his efforts. The motive for learning should, whenever possible, arise naturally from the activity itself rather than appear as an added reward.

As has already been emphasised, the student should be led and encouraged to learn by *insight* and understanding whenever possible: rote-learning should be cut to a minimum—and whenever it is impossible to avoid it the teacher should exert all his ingenuity to produce mnemonics to help the learning. In this battle against inappropriate rote-learning the student himself will often be strongly resistant—there is a widespread belief that to learn a new name for something is to improve one's understanding. Sometimes this unintelligent learning is rewarded by the kind of examination set at the end of a course—perhaps all of us can remember the kind of question which does this: a question on the liver, to nurses in training which allowed full marks to be gained by any student who knew the names of the parts and yet who knew nothing of the function of the organ!

As we have mentioned examinations, let us recommend tests and quizzes as part of the *learning* process—provided they are used properly. Knowledge of improvement is a very valuable stimulus to learning and beating oneself is a much better incentive than beating others, particularly for clever people.

Remember, as a teacher, the enormous individual differences between students. Not only do they differ in intellectual level, but also in their basic interests (which we need to tap to help us in our work) and in their response to different methods of presentation. *Talking* to people is a relatively inefficient method of teaching: supplement your lectures with effective blackboard work, simple charts and diagrams, dissected models, slides, film-strips and films: five minutes with a good visual aid is worth an hour's lecture to most students. Strive for variety and a novel approach as ways of stimulating your learners to active effort and participation.

A second article by Mr. Wiseman will appear in the next number.

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THE DISTRIBUTION OF EPIDEMIC DISEASES

By George Macdonald, M.D., D.P.H., D.T.M., *Director, The Ross Institute of Tropical Hygiene.*

It is sometimes interesting to stand back a bit and view diseases, not as we are always exhorted to do in medicine, in the way they affect individuals of varying make-up, but as entities in themselves with a natural life history, and to consider what factors affect that life history. For all infective diseases have an origin in some particular locality, tend to diffuse away from it and establish themselves in new territories where they find conditions favourable, persist in their new homes only if they can permanently withstand the natural obstacles they find there, produce effects on the human population which differ with the novelty or age of their importation, and finally, if all conditions are favourable, come to a state of equilibrium with the population. During all this the nature of the organism may change so that a once virulent disease becomes unimportant or a new plague arises from what had been a relatively minor ailment.

When we truly understand all these things we will at last get rid of epidemic disease: in the meantime we must try to see the reason behind apparently haphazard occurrences. Examples of the rise and fall of diseases are easy to find; the dramatic invasion of England by plague in the fourteenth century, its domination of the country for two centuries and its equally dramatic and quite unexplained disappearance; the occurrence in the fifteenth century of much dreaded epidemics of 'Sweating Sickness', and its total disappearance till it was recently recognised as a highly localised disease in parts of France; the decline in the virulence of scarlet fever over the last eighty years and the spread of alastrim in the last twenty. But the classic example of which most is known is cholera.

Nothing was known or heard of cholera during the eighteenth century when it certainly had no wide distribution. At the beginning of the nineteenth century ugly tales were heard of the rapid spread of a new plague across Asia, and panic grew as it crossed Europe and established itself eventually throughout the whole extent of the known civilised world, producing great epidemics in this country which are the origin of our whole public health system. In passing it is interesting to remember that the epidemiology of the disease was established by the study of

outbreaks in Golden Square, Regent Street, London, by a Dr. Snow who also did much to introduce chloroform to this country and administered it to Queen Victoria. But though cholera could establish itself almost throughout the world in favourable circumstances, it had not the qualities needed for persistence in good seasons and bad and finally faded out of the affected countries one by one. It is now again an Asiatic disease, firmly established in only half a dozen places in India, Burma, China, and the Phillippines from which it flares up to invade neighbouring countries, or to travel as far as Egypt in 1947, but always to disappear from them after a short and literally frightful stay.

Factors Affecting Epidemic Disease

The main factors modifying the process are the type of organism concerned ; the presence or absence of a resistant phase in its life cycle ; the route of carriage from man to man ; the movements of man which provide channels for it to spread from country to country ; and the degree of immunity it produces in the population it parasites.

Infecting organisms can be classified into innumerable types such as bacterial, protozoal, rickettsial, and helminthic, but for our present point of view the most important division is into two groups, one which has no *essential* cycle of multiplication outside the human body and one which cannot propagate itself except by a process involving growth or multiplication outside the body. The first type is too commonly understood in this country to need elaboration ; influenza, pneumonia, typhoid, scarlet fever and all the other diseases we know are caused by organisms which at any rate can pass direct from man to man. The other group is equally common but is hardly known in this country. A simple example is the hookworm, which infests the alimentary canal and passes eggs which are *not infective when excreted in the stool.* Before they become infective they must go through several steps of development: a larva appears inside them, escapes into the soil, and there grows to a more mature stage before it can re-establish itself in man by penetration of the skin. Other examples are the malaria parasite which must *develop* inside a mosquito, the filterable virus of yellow fever which also grows in a mosquito, the *Rickettsiae* of typhus which grow in a louse, the Schistosome worm causing bilharzial disease which grows in a snail, and a score of others. In this second group the obligatory external cycle is closely dependent on temperature and can only happen when it exceeds, as a broad generalisation, about 70° F. Hence they are limited to the tropics unless special circumstances such as the warmth of the louse's environment give them a chance in colder climates, whereas the first group may spread throughout the world.

The typhoid bacillus has a means of survival when transmission is

impossible, persisting in carriers almost indefinitely. The cholera vibrio has no such mechanism of resistance, rarely persisting in carriers beyond a couple of weeks and hence even temporary cessation of transmission due to sanitation, climatic changes, or chance, bring the disease entirely to an end. The malaria parasite also survives in carriers who tide it over cold weather and it can therefore persist in the subtropics, whilst the yellow fever virus dies out like the cholera vibrio as soon as conditions become unfavourable and is therefore strictly limited to the tropics except for short lived incursions into cooler countries. This possession, or lack, of a means of survival through hard times is the second great factor affecting the distribution of infective disease.

Within these main subdivisions diseases can be appropriately classified according to the route of entry into man, infections entering by the alimentary canal, the respiratory system, the surfaces of the body, and so on. This seems at first illogical when compared with classification on a pathological basis, but it does group diseases together according to their main underlying causes and it shows the lines to be followed to prevent them. The alimentary infections, from diarrhoea to dysentery and cholera, are diseases of bad sanitation, and so where one can prevail another can. The respiratory infections, from the common cold to pulmonary tuberculosis, are primarily associated with a certain density of population, poor housing conditions and domestic cleanliness, and to a lesser extent with climatic conditions exemplified in our own. The surface infections, from ophthalmia to scabies and syphilis are basically encouraged by a poor standard of social taste which does not revolt from promiscuous contact or from the sight of disease.

Some Unsolved Problems

This type of classification largely explains much of the distribution of disease, why we still have typhoid with us but not cholera, why Italy has malaria but not yellow fever, why we have so effectively controlled the alimentary infections but not the respiratory ones. It still leaves a host of questions unanswered, such as why leprosy, a surface infection in general conforming to others of that type, is so much more prevalent in hot wet countries than in others. It is our business to understand all these questions. The sailing ship which took centuries to carry yellow fever from its home in Africa to America and never carried it to the East has given place to the aircraft which can do either in a day, and without the disease becoming obvious on the journey. Not only such exotic diseases but many others which could acclimatise themselves readily here are still irregularly distributed or still localised almost unknown but awaiting distribution. The aircraft won't bring us yellow fever but it can and probably will bring us new and unpleasant varieties of the virus

of poliomyelitis, or even one of those viruses recently isolated and identified in the heart of Africa, just beside a main air route, whose attendant disease has not yet been described. The examples of spread of disease that have been quoted are from past history but the future may be expected to mirror them and our only defence lies in an increasing knowledge of the factors which determine the geographical distribution of disease.

BIOGRAPHICAL NOTES

ARTHUR J. LEWIS, Jr., A.B., M.A. (University of Denver).—Principal, University Park Elementary School, Denver, Colorado. Formerly high school biology teacher, and chairman of the teacher committee that investigated the health interests of children.

A. MOSS, M.R.San.I., Assoc.M.C. of T., Senior Housing Inspector, City of Manchester.—Engaged in Public Health work for over 40 years, as a Sanitary Inspector, on special investigation work for the Medical Officer of Health, on clearance of unfit houses in the City, and as part-time lecturer on sanitation and allied subjects at the College of Technology, Manchester.

PROFESSOR G. MACDONALD, M.D., D.P.H., D.T.M.—Qualified in Liverpool in 1924 when he immediately joined the Liverpool School of Tropical Medicine, spending four years in their research laboratory in Sierra Leone before going to the East where he worked in various medical capacities in India and Ceylon. Joined the Ross Institute in 1939. In the war designed the Army malaria control organisation, became Consultant Malariologist M.E.F. and C.M.F., and on demobilisation became Director of the Ross Institute.

R. G. McINNES, M.R.C.P., L.R.C.S.E., L.R.F.P.S.Glas., D.Psych.Ed.—Physician Superintendent, The Warneford Hospital, Oxford; Medical Director, The Park Hospital for Functional Nervous Disorders, Oxford; Honorary Physician in the Department of Psychiatric Medicine, The Radcliffe Infirmary, Oxford; Fellow of the Royal Society of Medicine. Author of chapter "Causative Factors in Mental Disturbance" in *Modern Trends in Psychological Medicine* edited by Noel G. Harris (Butterworth, 1948).

W. NORMAN TAYLOR, M.D.(Lond.), D.P.H.—Professor of Hygiene at the South African Native College, Fort Hare (University of South Africa), where he is engaged in training Hygiene Officers for the new Health Service. He was formerly Assistant M.O.H. at Bath, Somerset, and during the war served in the R.A.M.C.

STEPHEN WISEMAN, B.Sc., M.Ed.—Senior lecturer in Educational Psychology, University of Manchester. Head of the Department of Advanced Study in Education. 1942–46 engaged on educational and psychological research, R.A.F. Many years' teaching experience in different types of school and in adult education.

FILMS

TUBERCULOSIS. 1945. Sound. Black and white. 35 and 16 mm. 9 mins. Produced by Gaumont British for Imperial Chemical Industries. On free hire from the Central Film Library.

This is the third in the *Health of Dairy Cattle* series. This excellent film shows the symptoms of tuberculosis in dairy cattle—loss of flesh, lassitude and cough ; and explains how cattle may suffer from either avian or bovine tuberculosis, the latter being the more serious and dangerous to human beings, especially children. The veterinary surgeon arrives on a farm and applies the tuberculin test for both types to suspected animals. The methods of infection are shown, and the destruction of all infected animals is recommended. The disease may be prevented by using light, airy, clean buildings and preventing overcrowding in either cattle houses or pasture lands. The advantages of tuberculin tested milk are emphasised.

The film brings out all these points very clearly and the photography is of high standard throughout. Some microphotographic shots are especially worthy of praise.

The film was produced for farmers, but would be useful in rural secondary modern schools and technical schools where there are pre-agricultural courses. It could also be recommended for use in the hygiene courses of nurses and teachers in training.

L. E. H.

THE STORY OF PENICILLIN. 1947. 1 reel. Sound. Black and white. 35 and 16 mm. with handbook. 9 mins. Produced by Realist Film Unit. Obtainable from I.C.I. Film Library, Bolton House, 61 Curzon Street, W.1.

The film opens with a shot of the exterior of St. Mary's Hospital, Paddington, where the discovery was made. Then follow views of the laboratories which show the actual discovery and the subsequent careful testing before certitude is reached. This is most valuable as an example of scientific method. Also, the importance of team-work is emphasised throughout, as although two names are especially connected with this discovery, other scientific workers formed part of the essential team. The isolation and uses of penicillin are also well illustrated.

The microphotography is excellent and abundant throughout and adequately illustrates the main scientific facts.

This useful and praiseworthy film was produced for secondary school pupils and for such audiences it can be highly recommended to teach facts, arouse interest and show the great value of care in scientific experiment and observation. It could also be recommended for junior medical students, both nurses and doctors, and to the general public.

Its greatest merit lies in its display of first rate scientific research methods.

L. E. H.

BOOK REVIEWS

THE HISTORY OF STATE MEDICINE IN ENGLAND, being the Fitzpatrick Lectures of the Royal College of Physicians of London for the years 1946 and 1947, by Sir Arthur Salusbury MacNulty, K.C.B., M.A., M.D., F.R.C.P., F.R.C.S. (Royal Institute of Public Health and Hygiene, 28 Portland Place, W.1. 1948. Pp. 82. Price 12s. 6d.)

Sir Arthur MacNulty has made many distinguished contributions to the history of preventive medicine in this country. In the Fitzpatrick lectures while not presenting information which is not familiar to most interested readers he presents a picture of progress since the accession of Queen Victoria which is only made possible by long study and reflection. It is always difficult not to be dazzled by the brilliance of Chadwick and Simon, but this outline has avoided that hazard most skilfully. These lectures can be appreciated fully only by those relatively familiar with the subject, but at the same time they form a useful introduction for the general reader. The references are quite unique in their fullness and are invaluable for the serious student.

A. C. STEVENSON.

ADOLESCENCE—ITS SOCIAL PSYCHOLOGY, by C. M. Fleming. Edited by Carl Mannheim. (Routledge & Kegan Paul. 1948. Pp. 262. Diags. Price 16s.)

Since Stanley Hall wrote his monumental book on adolescence, there have been innumerable papers written on certain aspects of adolescence, but as far as we know no comprehensive work on the subject. This has been supplied by this book by Dr. Fleming. It is to be expected that there have been many changes since Stanley Hall's day, due to the large amount of research work undertaken, not merely by questionnaire which was Stanley Hall's method of investigation, but by direct observation of the child both in its spontaneous activity —as in Susan Isaac's work, and under more or less prescribed conditions, as in play diagnosis. These researches Dr. Fleming has taken into consideration in this book, which, however, is not a mere compilation but a consistent judgement of various aspects of adolescent life. Many old notions are de-bunked, such as the recapitulation theory as applied to the psychological development of the child, and more emphasis is laid on the social "needs" of the child as against specific instinctual trends. The satisfaction or denial of those needs determines the reaction, normal or abnormal, of the individual. There are seven chapters on the adolescent at home, five on the adolescent at school, and five on the threshold of maturity. The book is written from the point of view of an educationalist with telling illustrations, and we heartily recommend it to teachers, youth club leaders, or social workers, indeed, to any who wish to keep up to date in the study of the adolescent.

J. A. HADFIELD.

THE TRUTH ABOUT THE STORK, by Dr. Edward F. Griffith. (H. K. Lewis. 1948. Pp. 137. Diags. Price 6s.)

This book has been written for children, but it would help the many adults who are ignorant of the fundamentals of physiology and procreation. It is always difficult to translate scientific terminology into simple everyday language but the author has succeeded admirably.

He has shown much ingenuity and originality in the way he has compared physiological processes. For instance, the intricacies and marvels of the human body are compared with the record-breaking Rolls-Royce jet propulsion

engine. This would have an immediate appeal to a boy.

Gradually the story of life unfolds itself and the latter half of the book deals with "Men and Women and that strange thing called Love." The illustrations are particularly apt and original. Any child after reading these pages will have the answer to those questions that are for ever perturbing him.

The author is to be congratulated on the way he has presented what is one of the most difficult of subjects. The illustrations are excellent. The book can be strongly recommended for children and for those adults who will be questioned about the gooseberry bush, the stork, the doctor's little black bag and other nonsensical stories.

W. C. W. NIXON.

HEALTHY AND HAPPY, by Cyril Bibby, M.A., M.Sc., F.L.S. (Macmillan. 1948. Pp. 135. Illus. Price 3s.)

This is a book written for children aged 8–10 and it differs from most books in this category in its greater stress on the child's own viewpoint and interests rather than on the mere imparting of information.

The following comments are based upon information given to the reviewer by children. They found it interesting and enjoyable to read: the parts most appreciated were those where the children themselves could immediately apply and translate into action the information gathered e.g. Keeping Clean rather than You and Your Food, and Safe and Sound rather than You and Your Clothes. The value of the book can be judged by the fact that these children put into practice the ideas they had gained.

The book is excellently illustrated. To an adult the photographs would seem far superior to the drawings which are sometimes rather too full and busy. But the children's appreciation was for those illustrations which showed clear cut factual expressions e.g. the one showing the contrast between a pile of tidy clothes and a heap of untidy ones (page 96). There are problems at the end of each chapter. These were enjoyed but from the comments on the "True or Untrue" sections it looks as if English children need a little more explanation of this type of problem. They all expressed surprise and some shock at seeing untrue statements printed in a book.

From the point of view of a mere adult it is quite the best book of its kind for children which has appeared, and one which teachers will find most useful to use.

W. M. WARDEN.

DISTRICT NURSING, by E. J. Merry and I. D. Irven. (Baillière, Tindall & Cox. 1948. Pp. 266. Illus. Price 12s. 6d.)

This book is intended as a handbook for district nurses and should make a useful reference book for them.

The earlier chapters deal with the history, development and organisation of the District Nursing Service of this country as it was before July 1948. It is unfortunate that delay in publication has made such a book already out of date.

No mention is made of the place of this invaluable service under the new Health Act, but the descriptions and diagrams show how comprehensive a Queens and District Nursing Service Britain had even before 1948.

The later chapters are devoted to the technical details of skilled home nursing, and to outlining of public health and social insurance legislation, and vital statistics, as the district nurse needs to know them.

The book is well supplied with illustrations. The expert will be able to detect faults in some of these which show that they were posed for the purpose.

For the general reader the early chapters are full of interest, and should be widely read. The book as a whole,

however is technical, and as a textbook suffers from the defect of all such comprehensive manuals. In dealing with so many important subjects in relatively few pages it necessarily treats some of them rather superficially.

It seems a pity that such a book could not be published in two volumes, so that the part which is of general interest could be available to the general public at a smaller cost, and the technical part enlarged slightly to make it even more instructive for the nurse.

MARY FARNWORTH.

JUNIOR FIRST AID MANUAL, by the British Red Cross Society. (Educational Productions, Ltd., 17 Denbigh Street, S.W.1. 1948. Pp. 66. Illus. Price 2s. 6d.)

This paper-covered booklet depends on bold line drawings with a minimum of letterpress. The sketches are clear, well drawn, and emphasised by contrasting colour. It will appeal well to young first aiders and the teaching is sound. If there is any criticism it is that the descriptive letterpress shows less imagination than the drawings. It depends on the so familiar language of standard first aid texts. Had we been writing this we would have tried to put it as much as possible into words used commonly by young people every day. The novel presentation can be thoroughly recommended as both instructive and attractive to youngsters.

W. P. KENNEDY.

OLD PEOPLE'S WELFARE ON MERSEYSIDE, by Ellinor I. Black and Doris B. Read. (The University Press of Liverpool, 175 Brownlow Hill, Liverpool, 3. 1947. Pp. 110. Price 2s. 6d.)

This is an admirable study of the problems connected with old people and their welfare on Merseyside which has been carried out by Miss Black and Miss Read, from the Social Science Department of the University of Liverpool. The Nuffield Foundation were responsible for financing the study. It presents a wealth of factual information and deals with practically every aspect of the old age problem. It is obvious that there is a very large amount of interest in the area and numerous charitable organisations dealing with the different aspects of it. The authors stress the need for some central co-ordinating committee, a need which is obvious in other areas dealing with this problem. In the Summary they stress the need for more accommodation—Homes, Hostels, Nursing Homes, and particularly Holiday Homes.

This is altogether an admirable production and will be of the greatest help to Old Age Councils in other areas.

A. GREIG ANDERSON.

EVERYDAY BIOLOGY, by G. Pugh Smith. (G. Bell & Sons, Ltd., York House, Portugal Street, W.C.2. Revised 1948. Pp. 284. Illus. Price 5s. 6d.)

This is a good book, written for boys and girls of about 12–15 years of age. It is a well-illustrated introduction to the study of life and is suitable for use during the two years preceding a school certificate course. Because the author believes that the teaching of biology must relate the subject to life and to himself, he has designed his book more as a reader than as an examination textbook. The study of man has not been forgotten. There are sections on the balance of nature, the structure of living things, the evolution of animal life, growth and development, the effects of environment and an outline of heredity. There is work for six terms; and while teaching the scientific method of thinking, the contents become progressively broader and harder as it proceeds. Appendices on practical work and on sources of supply of material and films will be welcome to teachers.

P. M. TAYLOR.